



SEQUENCE LISTING

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Brose, Katja
Tessier-Lavigne, Marc

<120> Modulating Robo: Ligand Interactions

<130> B98-031-3

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<150> 60/065,544

<151> 1997-11-14

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<151> 1998-04-07

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<170> PatentIn Ver. 2.0

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Ser Cys Ser Gly Ser Thr Val Asp Cys His Gly Leu Ala Leu Arg Ser
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Asn Asn Ile Thr Arg Ile Thr Lys Thr Asp Phe Ala Gly Leu Arg His
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Leu Arg Val Leu Gln Leu Met Glu Asn Lys Ile Ser Thr Ile Glu Arg
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Asn His Leu Gln Leu Phe Pro Glu Leu Leu Phe Leu Gly Thr Ala Lys
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16

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Asp	Phe	Thr	Cys	Asp	Asp	Gly	Asn	Asp	Asp	Asn	Ser	Cys	Ser	Pro	Leu	
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Thr	Leu	Ile	Leu	Ser	Tyr	Asn	Arg	Leu	Arg	Cys	Ile	Pro	Pro	Arg	Thr	
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gct	aag	tgt	aac	ccc	tgc	cta	tca	aat	ccg	tgt	aaa	aat	gat	ggc	aca	2784
Ala	Lys	Cys	Asn	Pro	Cys	Leu	Ser	Asn	Pro	Cys	Lys	Asn	Asp	Gly	Thr	
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Phe	Lys	Gly	Gln	Asp	Cys	Asp	Val	Pro	Ile	His	Ala	Cys	Ile	Ser	Asn	

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Pro Cys Lys His Gly Gly Thr Cys His Leu Lys Glu Gly Glu Glu Asp	965	970	975	
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Gly Phe Trp Cys Ile Cys Ala Asp Gly Phe Glu Gly Glu Asn Cys Glu	980	985	990	
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Val Asn Val Asp Asp Cys Glu Asp Asn Asp Cys Glu Asn Asn Ser Thr	995	1000	1005	
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Cys Val Asp Gly Ile Asn Asn Tyr Thr Cys Leu Cys Pro Pro Glu Tyr	1010	1015	1020	
aca ggt gag ttg tgt gag gag aag ctg gac ttc tgt gcc cag gac ctg				3120
Thr Gly Glu Leu Cys Glu Glu Lys Leu Asp Phe Cys Ala Gln Asp Leu	1025	1030	1035	1040
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Phe Asp Asp Cys Gln Asp Asn Lys Cys Lys Asn Gly Ala His Cys Thr	1075	1080	1085	
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Asp Ala Val Asn Gly Tyr Thr Cys Ile Cys Pro Glu Gly Tyr Ser Gly	1090	1095	1100	
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gcc aca gat gaa gac agc gga atc ctc ctg tat aag ggt gac aaa gac				3600
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His Ile Ala Val Glu Leu Tyr Arg Gly Arg Val Arg Ala Ser Tyr Asp	1205	1210	1215	
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Val Pro Arg Asn Ile Pro Arg Asn Thr Glu Arg Leu Asp Leu Asn Gly
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Asn Asn Ile Thr Arg Ile Thr Lys Thr Asp Phe Ala Gly Leu Arg His
 65 70 75 80

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Gly Ala Phe Gln Asp Leu Lys Glu Leu Glu Arg Leu Arg Leu Asn Arg
 100 105 110

Asn His Leu Gln Leu Phe Pro Glu Leu Leu Phe Leu Gly Thr Ala Lys
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Leu Tyr Arg Leu Asp Leu Ser Glu Asn Gln Ile Gln Ala Ile Pro Arg
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Lys Ala Phe Arg Gly Ala Val Asp Ile Lys Asn Leu Gln Leu Asp Tyr
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Asn Gln Ile Ser Cys Ile Glu Asp Gly Ala Phe Arg Ala Leu Arg Asp
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Asn Asn Leu Tyr Cys Asp Cys His Leu Ala Trp Leu Ser Asp Trp Leu
 210 215 220

Arg Lys Arg Pro Arg Val Gly Leu Tyr Thr Gln Cys Met Gly Pro Ser
 225 230 235 240

His Leu Arg Gly His Asn Val Ala Glu Val Gln Lys Arg Glu Phe Val
 245 250 255
 Cys Ser Asp Glu Glu Glu Gly His Gln Ser Phe Met Ala Pro Ser Cys
 260 265 270
 Ser Val Leu His Cys Pro Ala Ala Cys Thr Cys Ser Asn Asn Ile Val
 275 280 285
 Asp Cys Arg Gly Lys Gly Leu Thr Glu Ile Pro Thr Asn Leu Pro Glu
 290 295 300
 Thr Ile Thr Glu Ile Arg Leu Glu Gln Asn Thr Ile Lys Val Ile Pro
 305 310 315 320
 Pro Gly Ala Phe Ser Pro Tyr Lys Lys Leu Arg Arg Ile Asp Leu Ser
 325 330 335
 Asn Asn Gln Ile Ser Glu Leu Ala Pro Asp Ala Phe Gln Gly Leu Arg
 340 345 350
 Ser Leu Asn Ser Leu Val Leu Tyr Gly Asn Lys Ile Thr Glu Leu Pro
 355 360 365
 Lys Ser Leu Phe Glu Gly Leu Phe Ser Leu Gln Leu Leu Leu Leu Asn
 370 375 380
 Ala Asn Lys Ile Asn Cys Leu Arg Val Asp Ala Phe Gln Asp Leu His
 385 390 395 400
 Asn Leu Asn Leu Leu Ser Leu Tyr Asp Asn Lys Leu Gln Thr Ile Ala
 405 410 415
 Lys Gly Thr Phe Ser Pro Leu Arg Ala Ile Gln Thr Met His Leu Ala
 420 425 430
 Gln Asn Pro Phe Ile Cys Asp Cys His Leu Lys Trp Leu Ala Asp Tyr
 435 440 445
 Leu His Thr Asn Pro Ile Glu Thr Ser Gly Ala Arg Cys Thr Ser Pro
 450 455 460
 Arg Arg Leu Ala Asn Lys Arg Ile Gly Gln Ile Lys Ser Lys Lys Phe
 465 470 475 480
 Arg Cys Ser Gly Thr Glu Asp Tyr Arg Ser Lys Leu Ser Gly Asp Cys
 485 490 495
 Phe Ala Asp Leu Ala Cys Pro Glu Lys Cys Arg Cys Glu Gly Thr Thr
 500 505 510
 Val Asp Cys Ser Asn Gln Lys Leu Asn Lys Ile Pro Glu His Ile Pro
 515 520 525
 Gln Tyr Thr Ala Glu Leu Arg Leu Asn Asn Asn Glu Phe Thr Val Leu
 530 535 540
 Glu Ala Thr Gly Ile Phe Lys Lys Leu Pro Gln Leu Arg Lys Ile Asn
 545 550 555 560
 Phe Ser Asn Asn Lys Ile Thr Asp Ile Glu Glu Gly Ala Phe Glu Gly
 565 570 575
 Ala Ser Gly Val Asn Glu Ile Leu Leu Thr Ser Asn Arg Leu Glu Asn
 580 585 590
 Val Gln His Lys Met Phe Lys Gly Leu Glu Ser Leu Lys Thr Leu Met

Cys Glu Pro Cys His Lys Lys Val Cys Ala His Gly Thr Cys Gln Pro
 1330 1335 1340
 Ser Ser Gln Ala Gly Phe Thr Cys Glu Cys Gln Glu Gly Trp Met Gly
 1345 1350 1355 1360
 Pro Leu Cys Asp Gln Arg Thr Asn Asp Pro Cys Leu Gly Asn Lys Cys
 1365 1370 1375
 Val His Gly Thr Cys Leu Pro Ile Asn Ala Phe Ser Tyr Ser Cys Lys
 1380 1385 1390
 Cys Leu Glu Gly His Gly Gly Val Leu Cys Asp Glu Glu Glu Asp Leu
 1395 1400 1405
 Phe Asn Pro Cys Gln Ala Ile Lys Cys Lys His Gly Lys Cys Arg Leu
 1410 1415 1420
 Ser Gly Leu Gly Gln Pro Tyr Cys Glu Cys Ser Ser Gly Tyr Thr Gly
 1425 1430 1435 1440
 Asp Ser Cys Asp Arg Glu Ile Ser Cys Arg Gly Glu Arg Ile Arg Asp
 1445 1450 1455
 Tyr Tyr Gln Lys Gln Gln Gly Tyr Ala Ala Cys Gln Thr Thr Lys Lys
 1460 1465 1470
 Val Ser Arg Leu Glu Cys Arg Gly Gly Cys Ala Gly Gly Gln Cys Cys
 1475 1480 1485
 Gly Pro Leu Arg Ser Lys Arg Arg Lys Tyr Ser Phe Glu Cys Thr Asp
 1490 1495 1500
 Gly Ser Ser Phe Val Asp Glu Val Glu Lys Val Val Lys Cys Gly Cys
 1505 1510 1515 1520
 Thr Arg Cys Val Ser
 1525

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 <212> PRT
 <213> human

<400> 3
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 Leu Met Glu Ile Pro Ala Asn Leu Pro Glu Gly Ile Val Glu Ile Arg
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 Leu Glu Gln Asn Ser Ile Lys Ala Ile Pro Ala Gly Ala Phe Thr Gln
 35 40 45
 Tyr Lys Lys Leu Lys Arg Ile Asp Ile Ser Lys Asn Gln Ile Ser Asp
 50 55 60
 Ile Ala Pro Asp Ala Phe Gln Gly Leu Lys Ser Leu Thr Ser Leu Val
 65 70 75 80
 Leu Tyr Gly Asn Lys Ile Thr Glu Ile Ala Lys Gly Leu Phe Asp Gly
 85 90 95
 Leu Val Ser Leu Gln Leu Leu Leu Leu
 100 105

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<211> 138
<212> PRT
<213> human

<400> 4
Glu Gly Ala Phe Asn Gly Ala Ala Ser Val Gln Glu Leu Met Leu Thr
1 5 10 15
Gly Asn Gln Leu Glu Thr Val His Gly Arg Gly Phe Arg Gly Gly Leu
20 25 30
Ser Gly Leu Lys Thr Leu Met Leu Arg Ser Asn Leu Ile Gly Cys Val
35 40 45
Ser Asn Asp Thr Phe Ala Gly Leu Ser Ser Val Arg Leu Leu Ser Leu
50 55 60
Tyr Asp Asn Arg Ile Thr Thr Ile Thr Pro Gly Ala Phe Thr Thr Leu
65 70 75 80
Val Ser Leu Ser Thr Ile Asn Leu Leu Ser Asn Pro Phe Asn Cys Asn
85 90 95
Cys His Leu Gly Ala Gly Leu Gly Lys Trp Leu Arg Lys Arg Arg Ile
100 105 110
Val Ser Gly Asn Pro Arg Cys Gln Lys Pro Phe Phe Leu Lys Glu Ile
115 120 125
Pro Ile Gln Gly Val Gly His Pro Gly Ile
130 135

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<211> 160
<212> PRT
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<400> 5
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Glu Asn Gln Asp Asp Cys Arg Asp His Arg Cys Gln Asn Gly Ala Gln
20 25 30
Cys Met Asp Glu Val Asn Ser Tyr Ser Cys Leu Cys Ala Glu Gly Tyr
35 40 45
Ser Gly Gln Leu Cys Glu Ile Pro Pro His Leu Pro Ala Pro Lys Ser
50 55 60
Pro Cys Glu Gly Thr Glu Cys Gln Asn Gly Ala Asn Cys Val Asp Gln
65 70 75 80
Gly Asn Arg Pro Val Cys Gln Cys Leu Pro Gly Phe Gly Gly Pro Glu
85 90 95
Cys Glu Lys Leu Leu Ser Val Asn Phe Val Asp Arg Asp Thr Tyr Leu
100 105 110
Gln Phe Thr Asp Leu Gln Asn Trp Xaa Arg Xaa Asn Ile Thr Leu Gln
115 120 125
Val Phe Thr Ala Glu Asp Asn Gly Ile Leu Leu Tyr Asn Gly Gly Asn
130 135 140
Asp His Ile Ala Val Xaa Leu Tyr Xaa Gly His Val Arg Phe Ser Tyr

145

150

155

160

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 <211> 103
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 Gly Phe Ser Gly Glu His Cys Gln Gln Glu Asn Pro Cys Leu Gly Gln
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 Val Val Arg Glu Val Ile Arg Arg Gln Lys Gly Tyr Ala Ser Cys Ala
 35 40 45
 Thr Ala Ser Lys Val Pro Ile Met Glu Cys Arg Gly Gly Cys Gly Pro
 50 55 60
 Gln Cys Cys Gln Pro Thr Arg Ser Lys Arg Arg Lys Tyr Val Phe Gln
 65 70 75 80
 Cys Thr Asp Gly Ser Ser Phe Val Glu Glu Val Glu Arg His Leu Glu
 85 90 95
 Cys Gly Cys Leu Ala Cys Ser
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<210> 7
 <211> 1480
 <212> PRT
 <213> Drosophila melanogaster

<400> 7
 Met Ala Ala Pro Ser Arg Thr Thr Leu Met Pro Pro Pro Phe Arg Leu
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 Gln Leu Arg Leu Leu Ile Leu Pro Ile Leu Leu Leu Leu Arg His Asp
 20 25 30
 Ala Val His Ala Glu Pro Tyr Ser Gly Gly Phe Gly Ser Ser Ala Val
 35 40 45
 Ser Ser Gly Gly Leu Gly Ser Val Gly Ile His Ile Pro Gly Gly Gly
 50 55 60
 Val Gly Val Ile Thr Glu Ala Arg Cys Pro Arg Val Cys Ser Cys Thr
 65 70 75 80
 Gly Leu Asn Val Asp Cys Ser His Arg Gly Leu Thr Ser Val Pro Arg
 85 90 95
 Lys Ile Ser Ala Asp Val Glu Arg Leu Glu Leu Gln Gly Asn Asn Leu
 100 105 110
 Thr Val Ile Tyr Glu Thr Asp Phe Gln Arg Leu Thr Lys Leu Arg Met
 115 120 125
 Leu Gln Leu Thr Asp Asn Gln Ile His Thr Ile Glu Arg Asn Ser Phe
 130 135 140
 Gln Asp Leu Val Ser Leu Glu Arg Leu Asp Ile Ser Asn Asn Val Ile

145		150		155		160
Thr Thr Val Gly Arg Arg Val Phe Lys Gly Ala Gln Ser Leu Arg Ser						
		165		170		175
Leu Gln Leu Asp Asn Asn Gln Ile Thr Cys Leu Asp Glu His Ala Phe						
		180		185		190
Lys Gly Leu Val Glu Leu Glu Ile Leu Thr Leu Asn Asn Asn Asn Leu						
		195		200		205
Thr Ser Leu Pro His Asn Ile Phe Gly Gly Leu Gly Arg Leu Arg Ala						
		210		215		220
Leu Arg Leu Ser Asp Asn Pro Phe Ala Cys Asp Cys His Leu Ser Trp						
		225		230		235
Leu Ser Arg Phe Leu Arg Ser Ala Thr Arg Leu Ala Pro Tyr Thr Arg						
		245		250		255
Cys Gln Ser Pro Ser Gln Leu Lys Gly Gln Asn Val Ala Asp Leu His						
		260		265		270
Asp Gln Glu Phe Lys Cys Ser Gly Leu Thr Glu His Ala Pro Met Glu						
		275		280		285
Cys Gly Ala Glu Asn Ser Cys Pro His Pro Cys Arg Cys Ala Asp Gly						
		290		295		300
Ile Val Asp Cys Arg Glu Lys Ser Leu Thr Ser Val Pro Val Thr Leu						
		305		310		315
Pro Asp Asp Thr Thr Asp Val Arg Leu Glu Gln Asn Phe Ile Thr Glu						
		325		330		335
Leu Pro Pro Lys Ser Phe Ser Ser Phe Arg Arg Leu Arg Arg Ile Asp						
		340		345		350
Leu Ser Asn Asn Asn Ile Ser Arg Ile Ala His Asp Ala Leu Ser Gly						
		355		360		365
Leu Lys Gln Leu Thr Thr Leu Val Leu Tyr Gly Asn Lys Ile Lys Asp						
		370		375		380
Leu Pro Ser Gly Val Phe Lys Gly Leu Gly Ser Leu Arg Leu Leu Leu						
		385		390		395
Leu Asn Ala Asn Glu Ile Ser Cys Ile Arg Lys Asp Ala Phe Arg Asp						
		405		410		415
Leu His Ser Leu Ser Leu Leu Ser Leu Tyr Asp Asn Asn Ile Gln Ser						
		420		425		430
Leu Ala Asn Gly Thr Phe Asp Ala Met Lys Ser Met Lys Thr Val His						
		435		440		445
Leu Ala Lys Asn Pro Phe Ile Cys Asp Cys Asn Leu Arg Trp Leu Ala						
		450		455		460
Asp Tyr Leu His Lys Asn Pro Ile Glu Thr Ser Gly Ala Arg Cys Glu						
		465		470		475
Ser Pro Lys Arg Met His Arg Arg Arg Ile Glu Ser Leu Arg Glu Glu						
		485		490		495
Lys Phe Lys Cys Ser Trp Gly Glu Leu Arg Met Lys Leu Ser Gly Glu						
		500		505		510

Cys Arg Met Asp Ser Asp Cys Pro Ala Met Cys His Cys Glu Gly Thr
 515 520 525
 Thr Val Asp Cys Thr Gly Arg Arg Leu Lys Glu Ile Pro Arg Asp Ile
 530 535 540
 Pro Leu His Thr Thr Glu Leu Leu Leu Asn Asp Asn Glu Leu Gly Arg
 545 550 555 560
 Ile Ser Ser Asp Gly Leu Phe Gly Arg Leu Pro His Leu Val Lys Leu
 565 570 575
 Glu Leu Lys Arg Asn Gln Leu Thr Gly Ile Glu Pro Asn Ala Phe Glu
 580 585 590
 Gly Ala Ser His Ile Gln Glu Leu Gln Leu Gly Glu Asn Lys Ile Lys
 595 600 605
 Glu Ile Ser Asn Lys Met Phe Leu Gly Leu His Gln Leu Lys Thr Leu
 610 615 620
 Asn Leu Tyr Asp Asn Gln Ile Ser Cys Val Met Pro Gly Ser Phe Glu
 625 630 635 640
 His Leu Asn Ser Leu Thr Ser Leu Asn Leu Ala Ser Asn Pro Phe Asn
 645 650 655
 Cys Asn Cys His Leu Ala Trp Phe Ala Glu Cys Val Arg Lys Lys Ser
 660 665 670
 Leu Asn Gly Gly Ala Ala Arg Cys Gly Ala Pro Ser Lys Val Arg Asp
 675 680 685
 Val Gln Ile Lys Asp Leu Pro His Ser Glu Phe Lys Cys Ser Ser Glu
 690 695 700
 Asn Ser Glu Gly Cys Leu Gly Asp Gly Tyr Cys Pro Pro Ser Cys Thr
 705 710 715 720
 Cys Thr Gly Thr Val Val Ala Cys Ser Arg Asn Gln Leu Lys Glu Ile
 725 730 735
 Pro Arg Gly Ile Pro Ala Glu Thr Ser Glu Leu Tyr Leu Glu Ser Asn
 740 745 750
 Glu Ile Glu Gln Ile His Tyr Glu Arg Ile Arg His Leu Arg Ser Leu
 755 760 765
 Thr Arg Leu Asp Leu Ser Asn Asn Gln Ile Thr Ile Leu Ser Asn Tyr
 770 775 780
 Thr Phe Ala Asn Leu Thr Lys Leu Ser Thr Leu Ile Ile Ser Tyr Asn
 785 790 795 800
 Lys Leu Gln Cys Leu Gln Arg His Ala Leu Ser Gly Leu Asn Asn Leu
 805 810 815
 Arg Val Val Ser Leu His Gly Asn Arg Ile Ser Met Leu Pro Glu Gly
 820 825 830
 Ser Phe Glu Asp Leu Lys Ser Leu Thr His Ile Ala Leu Gly Ser Asn
 835 840 845
 Pro Leu Tyr Cys Asp Cys Gly Leu Lys Trp Phe Ser Asp Trp Ile Lys
 850 855 860
 Leu Asp Tyr Val Glu Pro Gly Ile Ala Arg Cys Ala Glu Pro Glu Gln
 865 870 875 880

Met Lys Asp Lys Leu Ile Leu Ser Thr Pro Ser Ser Ser Phe Val Cys
 885 890 895
 Arg Gly Arg Val Arg Asn Asp Ile Leu Ala Lys Cys Asn Ala Cys Phe
 900 905 910
 Glu Gln Pro Cys Gln Asn Gln Ala Gln Cys Val Ala Leu Pro Gln Arg
 915 920 925
 Glu Tyr Gln Cys Leu Cys Gln Pro Gly Tyr His Gly Lys His Cys Glu
 930 935 940
 Phe Met Ile Asp Ala Cys Tyr Gly Asn Pro Cys Arg Asn Asn Ala Thr
 945 950 955 960
 Cys Thr Val Leu Glu Glu Gly Arg Phe Ser Cys Gln Cys Ala Pro Gly
 965 970 975
 Tyr Thr Gly Ala Arg Cys Glu Thr Asn Ile Asp Asp Cys Leu Gly Glu
 980 985 990
 Ile Lys Cys Gln Asn Asn Ala Thr Cys Ile Asp Gly Val Glu Ser Tyr
 995 1000 1005
 Lys Cys Glu Cys Gln Pro Gly Phe Ser Gly Glu Phe Cys Asp Thr Lys
 1010 1015 1020
 Ile Gln Phe Cys Ser Pro Glu Phe Asn Pro Cys Ala Asn Gly Ala Lys
 1025 1030 1035 1040
 Cys Met Asp His Phe Thr His Tyr Ser Cys Asp Cys Gln Ala Gly Phe
 1045 1050 1055
 His Gly Thr Asn Cys Thr Asp Asn Ile Asp Asp Cys Gln Asn His Met
 1060 1065 1070
 Cys Gln Asn Gly Gly Thr Cys Val Asp Gly Ile Asn Asp Tyr Gln Cys
 1075 1080 1085
 Arg Cys Pro Asp Asp Tyr Thr Gly Lys Tyr Cys Glu Gly His Asn Met
 1090 1095 1100
 Ile Ser Met Met Tyr Pro Gln Thr Ser Pro Cys Gln Asn His Glu Cys
 1105 1110 1115 1120
 Lys His Gly Val Cys Phe Gln Pro Asn Ala Gln Gly Ser Asp Tyr Leu
 1125 1130 1135
 Cys Arg Cys His Pro Gly Tyr Thr Gly Lys Trp Cys Glu Tyr Leu Thr
 1140 1145 1150
 Ser Ile Ser Phe Val His Asn Asn Ser Phe Val Glu Leu Glu Pro Leu
 1155 1160 1165
 Arg Thr Arg Pro Glu Ala Asn Val Thr Ile Val Phe Ser Ser Ala Glu
 1170 1175 1180
 Gln Asn Gly Ile Leu Met Tyr Asp Gly Gln Asp Ala His Leu Ala Val
 1185 1190 1195 1200
 Glu Leu Phe Asn Gly Arg Ile Arg Val Ser Tyr Asp Val Gly Asn His
 1205 1210 1215
 Pro Val Ser Thr Met Tyr Ser Phe Glu Met Val Ala Asp Gly Lys Tyr
 1220 1225 1230

His Ala Val Glu Leu Leu Ala Ile Lys Lys Asn Phe Thr Leu Arg Val
 1235 1240 1245
 Asp Arg Gly Leu Ala Arg Ser Ile Ile Asn Glu Gly Ser Asn Asp Tyr
 1250 1255 1260
 Leu Lys Leu Thr Thr Pro Met Phe Leu Gly Gly Leu Pro Val Asp Pro
 1265 1270 1275 1280
 Ala Gln Gln Ala Tyr Lys Asn Trp Gln Ile Arg Asn Leu Thr Ser Phe
 1285 1290 1295
 Lys Gly Cys Met Lys Glu Val Trp Ile Asn His Lys Leu Val Asp Phe
 1300 1305 1310
 Gly Asn Ala Gln Arg Gln Gln Lys Ile Thr Pro Gly Cys Ala Leu Leu
 1315 1320 1325
 Glu Gly Glu Gln Gln Glu Glu Asp Asp Glu Gln Asp Phe Met Asp
 1330 1335 1340
 Glu Thr Pro His Ile Lys Glu Glu Pro Val Asp Pro Cys Leu Glu Asn
 1345 1350 1355 1360
 Lys Cys Arg Arg Gly Ser Arg Cys Val Pro Asn Ser Asn Ala Arg Asp
 1365 1370 1375
 Gly Tyr Gln Cys Lys Cys Lys His Gly Gln Arg Gly Arg Tyr Cys Asp
 1380 1385 1390
 Gln Gly Glu Gly Ser Thr Glu Pro Pro Thr Val Thr Ala Ala Ser Thr
 1395 1400 1405
 Cys Arg Lys Glu Gln Val Arg Glu Tyr Tyr Thr Glu Asn Asp Cys Arg
 1410 1415 1420
 Ser Arg Gln Pro Leu Lys Tyr Ala Lys Cys Val Gly Gly Cys Gly Asn
 1425 1430 1435 1440
 Gln Cys Cys Ala Ala Lys Ile Val Arg Arg Arg Lys Val Arg Met Val
 1445 1450 1455
 Cys Ser Asn Asn Arg Lys Tyr Ile Lys Asn Leu Asp Ile Val Arg Lys
 1460 1465 1470
 Cys Gly Cys Thr Lys Lys Cys Tyr
 1475 1480

<210> 8
 <211> 155
 <212> PRT
 <213> Caenorhabditis elegans

<400> 8
 Arg Asn Pro Xaa Ile Cys Asp Cys Asn Leu Gln Trp Leu Ala Gln Ile
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 Asn Leu Gln Lys Asn Ile Glu Thr Ser Gly Ala Arg Cys Glu Gln Pro
 20 25 30
 Lys Arg Leu Arg Lys Lys Lys Phe Ala Thr Leu Pro Pro Asn Lys Phe
 35 40 45
 Lys Cys Lys Gly Ser Glu Ser Phe Val Ser Met Tyr Ala Asp Ser Cys
 50 55 60
 Phe Ile Asp Ser Ile Cys Pro Thr Gln Cys Asp Cys Tyr Gly Thr Thr

65					70					75				80	
Val	Asp	Cys	Asn	Lys	Arg	Gly	Leu	Asn	Thr	Ile	Pro	Thr	Ser	Ile	Pro
				85					90					95	
Arg	Phe	Ala	Thr	Gln	Leu	Leu	Leu	Ser	Gly	Asn	Asn	Ile	Ser	Thr	Val
			100					105					110		
Asp	Leu	Asn	Ser	Asn	Ile	His	Val	Leu	Glu	Asn	Leu	Glu	Xaa	Leu	Asp
		115					120					125			
Leu	Ser	Asn	Asn	His	Ile	Thr	Phe	Ile	Asn	Asp	Lys	Ser	Phe	Glu	Lys
	130					135					140				
Leu	Ser	Lys	Leu	Arg	Glu	Leu	Xaa	Leu	Asn	Asp					
145					150					155					

<210> 9
 <211> 735
 <212> PRT
 <213> Caenorhabditis elegans

<400> 9															
Ser	Asn	Lys	Asn	Leu	Thr	Ser	Phe	Pro	Ser	Arg	Ile	Pro	Phe	Asp	Thr
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Thr	Glu	Leu	Tyr	Leu	Asp	Ala	Asn	Tyr	Ile	Asn	Glu	Ile	Pro	Ala	His
			20					25					30		
Asp	Leu	Asn	Arg	Leu	Tyr	Ser	Leu	Thr	Lys	Leu	Asp	Leu	Ser	His	Asn
		35					40					45			
Arg	Leu	Ile	Ser	Leu	Glu	Asn	Asn	Thr	Phe	Ser	Asn	Leu	Thr	Arg	Leu
	50					55					60				
Ser	Thr	Leu	Ile	Ile	Ser	Tyr	Asn	Lys	Leu	Arg	Cys	Leu	Gln	Pro	Leu
	65					70				75					80
Ala	Phe	Asn	Gly	Leu	Asn	Ala	Leu	Arg	Ile	Leu	Ser	Leu	His	Gly	Asn
				85					90					95	
Asp	Ile	Ser	Phe	Leu	Pro	Gln	Ser	Ala	Phe	Ser	Asn	Leu	Thr	Ser	Ile
			100					105					110		
Thr	His	Ile	Ala	Val	Gly	Ser	Asn	Ser	Leu	Tyr	Cys	Asp	Cys	Asn	Met
		115					120					125			
Ala	Trp	Phe	Ser	Lys	Trp	Ile	Lys	Ser	Lys	Phe	Ile	Glu	Ala	Gly	Ile
	130					135					140				
Ala	Arg	Cys	Glu	Tyr	Pro	Asn	Thr	Val	Ser	Asn	Gln	Leu	Leu	Leu	Thr
	145				150					155					160
Ala	Gln	Pro	Tyr	Gln	Phe	Thr	Cys	Asp	Ser	Lys	Val	Pro	Thr	Lys	Leu
				165					170					175	
Ala	Thr	Lys	Cys	Asp	Leu	Cys	Leu	Asn	Ser	Pro	Cys	Lys	Asn	Asn	Ala
			180					185					190		
Ile	Cys	Glu	Thr	Thr	Ser	Ser	Arg	Lys	Tyr	Thr	Cys	Asn	Cys	Thr	Pro
		195					200					205			
Gly	Phe	Tyr	Gly	Val	His	Cys	Glu	Asn	Gln	Ile	Asp	Ala	Cys	Tyr	Gly
	210					215					220				
Ser	Pro	Cys	Leu	Asn	Asn	Ala	Thr	Cys	Lys	Val	Ala	Gln	Ala	Gly	Arg
	225				230					235					240

Phe Asn Cys Tyr Cys Asn Lys Gly Phe Glu Gly Asp Tyr Cys Glu Lys
245 250 255
Asn Ile Asp Asp Cys Val Asn Ser Lys Cys Glu Asn Gly Gly Lys Cys
260 265 270
Val Asp Leu Val Arg Phe Cys Ser Glu Glu Leu Lys Asn Phe Gln Ser
275 280 285
Phe Gln Ile Asn Ser Tyr Arg Cys Asp Cys Pro Met Glu Tyr Glu Gly
290 295 300
Lys His Cys Glu Asp Lys Leu Glu Tyr Cys Thr Lys Lys Leu Asn Pro
305 310 315 320
Cys Glu Asn Asn Gly Lys Cys Ile Pro Ile Asn Gly Ser Tyr Ser Cys
325 330 335
Met Cys Ser Pro Gly Phe Thr Gly Asn Asn Cys Glu Thr Asn Ile Asp
340 345 350
Asp Cys Lys Asn Val Glu Cys Gln Asn Gly Gly Ser Cys Val Asp Gly
355 360 365
Ile Leu Ser Tyr Asp Cys Leu Cys Arg Pro Gly Tyr Ala Gly Gln Tyr
370 375 380
Cys Glu Ile Pro Pro Met Met Asp Met Glu Tyr Gln Lys Thr Asp Ala
385 390 395 400
Cys Gln Gln Ser Ala Cys Gly Gln Gly Glu Cys Val Ala Ser Gln Asn
405 410 415
Ser Ser Asp Phe Thr Cys Lys Cys His Glu Gly Phe Ser Gly Pro Ser
420 425 430
Cys Asp Arg Gln Met Ser Val Gly Phe Lys Asn Pro Gly Ala Tyr Leu
435 440 445
Ala Leu Asp Pro Leu Ala Ser Asp Gly Thr Ile Thr Met Thr Leu Arg
450 455 460
Thr Thr Ser Lys Ile Gly Ile Leu Leu Tyr Tyr Gly Asp Asp His Phe
465 470 475 480
Val Ser Ala Glu Leu Tyr Asp Gly Arg Val Lys Leu Val Tyr Tyr Ile
485 490 495
Gly Asn Phe Pro Ala Ser His Met Tyr Ser Ser Val Lys Val Asn Asp
500 505 510
Gly Leu Pro His Arg Ile Ser Ile Arg Thr Ser Glu Arg Lys Cys Phe
515 520 525
Leu Gln Ile Asp Lys Asn Pro Val Gln Ile Val Glu Asn Ser Gly Lys
530 535 540
Ser Asp Gln Leu Ile Thr Lys Gly Lys Glu Met Leu Tyr Ile Gly Gly
545 550 555 560
Leu Pro Ile Glu Lys Ser Gln Asp Ala Lys Arg Arg Phe His Val Lys
565 570 575
Asn Ser Glu Ser Leu Lys Gly Cys Ile Ser Ser Ile Thr Ile Asn Glu
580 585 590
Val Pro Ile Asn Leu Gln Gln Ala Leu Glu Asn Val Asn Thr Glu Gln

595					600					605					
Ser	Cys	Ser	Ala	Thr	Val	Asn	Phe	Cys	Ala	Gly	Ile	Asp	Cys	Gly	Asn
610						615					620				
Gly	Lys	Cys	Thr	Asn	Asn	Ala	Leu	Ser	Pro	Lys	Gly	Tyr	Met	Cys	Gln
625					630					635					640
Cys	Asp	Ser	His	Phe	Ser	Gly	Glu	His	Cys	Asp	Glu	Lys	Arg	Ile	Lys
				645					650					655	
Cys	Asp	Lys	Gln	Lys	Phe	Arg	Arg	His	His	Ile	Glu	Asn	Glu	Cys	Arg
			660					665					670		
Ser	Val	Asp	Arg	Ile	Lys	Ile	Ala	Glu	Cys	Asn	Gly	Tyr	Cys	Gly	Gly
		675					680					685			
Glu	Gln	Asn	Cys	Cys	Thr	Ala	Val	Lys	Lys	Lys	Gln	Arg	Lys	Val	Lys
	690					695					700				
Met	Ile	Cys	Lys	Asn	Gly	Thr	Thr	Lys	Ile	Ser	Thr	Val	His	Ile	Ile
705					710					715					720
Arg	Gln	Cys	Gln	Cys	Glu	Pro	Thr	Lys	Ser	Val	Leu	Ser	Glu	Lys	
				725					730					735	

<210> 10
<211> 154

<212> PRT
<213> mouse

<400> 10	Asp	Pro	Leu	Pro	Val	His	His	Arg	Cys	Glu	Cys	Met	Leu	Gly	Tyr	Thr
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	Gly	Asp	Asn	Cys	Ser	Glu	Asn	Gln	Asp	Asp	Cys	Lys	Asp	His	Lys	Cys
				20					25					30		
	Gln	Asn	Gly	Ala	Gln	Cys	Val	Asp	Glu	Val	Asn	Ser	Tyr	Ala	Cys	Leu
			35					40					45			
	Cys	Val	Glu	Gly	Tyr	Ser	Gly	Gln	Leu	Cys	Glu	Ile	Pro	Pro	Ala	Pro
		50					55					60				
	Arg	Ser	Ser	Cys	Glu	Gly	Thr	Glu	Cys	Gln	Asn	Gly	Ala	Asn	Cys	Val
	65					70					75					80
	Asp	Gln	Gly	Ser	Arg	Pro	Val	Cys	Gln	Cys	Leu	Pro	Gly	Phe	Gly	Gly
					85					90					95	
	Pro	Glu	Cys	Glu	Lys	Leu	Leu	Ser	Val	Asn	Phe	Val	Asp	Arg	Asp	Thr
				100					105					110		
	Tyr	Leu	Gln	Phe	Thr	Asp	Leu	Gln	Asn	Trp	Pro	Arg	Ala	Asn	Ile	Thr
			115					120					125			
	Leu	Gln	Val	Ser	Thr	Ala	Glu	Asp	Asn	Gly	Ile	Leu	Leu	Tyr	Asn	Gly
		130					135					140				
	Asp	Asn	Asp	His	Ile	Ala	Val	Glu	Leu	Tyr						
	145						150									

<210> 11
<211> 110
<212> PRT
<213> mouse

<400> 11
 Ala Phe Lys Cys His His Gly Gln Cys His Ile Ser Asp Arg Gly Glu
 1 5 10 15
 Pro Tyr Cys Leu Cys Gln Pro Gly Phe Ser Gly His His Cys Glu Gln
 20 25 30
 Glu Asn Pro Cys Met Gly Glu Ile Val Arg Glu Ala Ile Arg Arg Gln
 35 40 45
 Lys Asp Tyr Ala Ser Cys Ala Thr Ala Ser Lys Val Pro Ile Met Glu
 50 55 60
 Cys Arg Gly Gly Cys Gly Thr Thr Cys Cys Gln Pro Ile Arg Ser Lys
 65 70 75 80
 Arg Arg Lys Tyr Val Phe Gln Cys Thr Asp Gly Ser Ser Phe Val Glu
 85 90 95
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 Arg Leu Tyr Arg Leu Asp Leu Ser Glu Asn Gln Ile Gln Ala Ile Pro
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 Arg Lys Ala Phe Arg Gly Ala Val Asp Ile Lys Asn Leu Gln Leu Asp
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 Tyr Asn Gln Ile Ser Cys Ile Glu Asp Gly Ala Phe Arg Ala Leu Arg
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 Asp Leu Glu Val Leu Thr Leu Asn Asn Asn Asn Ile Thr Arg Leu Ser
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 Ser Asn Asn Leu Tyr Cys
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Cys Ala Ser

